Westwood

DECOMMISSIONING PLAN

# Great Pathfinder Wind Power

Boone and Hamilton Counties, Iowa

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**Prepared For:**

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## 1.0 INTRODUCTION / PURPOSE

The Great Pathfinder Wind Project (the "Facility") is a wind power generation project proposed by Apex Clean Energy, Inc. (the "Applicant"[1]) in Boone and Hamilton Counties, Iowa. The Facility includes the construction of permanent facilities consisting of 74 GE 140 meter rotor turbines with a 98 meter hub height (40 of which are located in Boone County), access roads, met towers, a substation, underground collection lines, a transmission line, and an operation and maintenance (O&M) facility. The capacities of the turbines are 3.03 MW, for a total project capacity of 222 MW.

The purpose of this "Decommissioning Plan" (and its succeeding and revised Decommissioning Plans, (the "Plans") is to describe the means and methods that can be used to remove project facilities, and reclaim, restore, and return the land altered during the construction and operation of the wind project to its predevelopment condition to the extent feasible. The Plans identify components to be removed, and the areas to be restored once the Facility has been abandoned, not operated for twelve consecutive months, or when the Facility has surpassed the useful lifespan of the turbines and facilities. This includes the disrepair of individual turbines which may pose a health or safety issue. The useful life of commercial size turbines is generally considered to be 30 years.

The applicant acknowledges that decommissioning is accomplished at Applicant's (and its successors-in-interest and assigns) expense. Applicant also commits that if Applicant does not complete decommissioning within the time specified, Boone County may take action as necessary to complete decommissioning, including drawing on the financial assurance.

The Decommissioning Plan will be updated and re-filed with the Boone County periodically. The revised plans will reflect advancements in construction techniques, reclamation equipment, and standards. The decommissioning cost estimate will also be revised every five years to reflect the changes in the costs.

## 2.0 PROPOSED FUTURE LAND USE

Prior to the development of the Facility, the land use in the areas affected by development was primarily agricultural land planted with row crops. After affected areas are decommissioned, these areas will be returned to their predevelopment condition to the extent commercially feasible.

## 3.0 ENGINEERING TECHNIQUES

Decommissioning includes several phases and activities, such as:

- Preparation of crane paths to accommodate movement of large industrial cranes to and from each turbine location;
- Preparation of crane pads for removal of turbine components;
- Removal of above ground components (turbines, transformers, met towers, substation, and possibly the operation and maintenance facility);
- Removal of turbine, transformer, met tower, substation, and O&M building foundations to a depth of four (4) feet;

[1] As set forth in the Boone County, Iowa Zoning Ordinance #88. Adopted July 1, 2008 (Section 8.04 Commercial/Utility Wind Energy Systems (the "Ordinance"), "Applicant" means the entity filing an Application under Ordinance #95, dated February 2009.

- Removal of underground collection system and fiber optic cables to a depth of four (4) feet;
- Removal of access roads (unless the landowners request the roads to remain) and crane paths;
- Restoration of crane paths and access roads, including decompaction;
- Reclamation, re-grading, and restoration of disturbed areas including top soil reapplication and decompaction of soils;
- Application of necessary sediment and erosion controls during and following decommissioning; and
- Repair of public roads and culverts to pre-decommissioning condition.

During decommissioning, participating landowners will be consulted to determine the scope and extent of reclamation work to be completed. Some Facility infrastructure, such as the access roads, may be left in place at the landowner's request. Underground utility lines deeper than four (4) feet below ground may be left in place to minimize land disturbance and associated impacts to future agricultural land use.

Decommissioning will include the removal and transportation of all turbine components and debris from the Facility site. Decommissioning will also include the removal of cabling, electrical components, access roads, and any other associated facilities in the manner described in the Plan, unless otherwise agreed upon by Applicant and the applicable landowner. All dismantling, removal, recycling, and disposal of materials generated during decommissioning will comply with rules, regulations, and prevailing laws at the time decommissioning is initiated, and will use approved local or regional disposal or recycling sites as available. Recyclable materials will be recycled to the furthest extent practicable. Non-recyclable materials will be disposed of in accordance with state and federal law.

There are no known hazardous materials contemplated for incorporation in the Facility with the exception of certain oils and fluids described in the section on the O&M facility. During decommissioning the then current regulations for identifying, handling, and disposing of hazardous materials will be followed.

## 3.1 DECOMMISSIONING

*Public Road Modifications and Removal*

Temporary turning radius modifications are not expected to be needed for decommissioning as turbines that have reached the end of useful life have scrap value, but little resale value. Transportation of the turbine components off-site will be accomplished using conventional over the road trucks. Following removal of the decommissioned turbine components, any turning radius modifications required for decommissioning will be removed, and any disturbed areas will be restored to preconstruction condition using thorough decompaction techniques and re-application of topsoil. After all hauling activities are complete, the public roads will be restored to pre-decommissioning condition, or a payment for road life consumed will be made.

*Crane Path Preparation and Removal*

To facilitate the movement of the large industrial cranes used to disassemble the turbines, crane paths will be required between the turbine sites. A crane path network was designed for the construction of the wind project. The same corridors are likely to be used for decommissioning. Some turbine access roads may be temporarily widened from their operational width of 16 feet to approximately 36 feet wide, by compacting in-place soils to create crane shoulders on roads that

were configured to accommodate crane travel during the construction of the Facility. Preparations include compaction of the native soils, construction of temporary road crossings, and construction of crane mat crossings, low water crossings, and/or temporary culverts to cross streams. Following disassembly of the wind turbines, the temporary crossings will be removed and the crossing areas will be restored to pre-decommissioning conditions. The soil on the crane paths will be decompacted and restored to a tillable condition.

*Crane Pad Preparation, Removal, and Restoration*

An approximately 40 foot by 80 foot crane pad will be prepared at each turbine location to be used during dismantling of the turbines. Temporary alteration of turbine pads may be necessary to facilitate crane movements during decommissioning of above-ground turbine components. If such alteration is necessary, topsoil from the additional disturbed areas will be stripped and isolated, for re-application after turbines have been dismantled and crane pads removed. After removal of all turbine components, the crane pad area will be removed by excavating any granular materials placed during the initial construction of the crane pad. Disturbed areas will be restored to preconstruction condition by re-grading the area, reapplying topsoil, and de-compacting the subsoil and topsoil. See section 3.2 for additional information on reclamation and restoration.

*Wind Turbine Removal*

Each turbine consists of four (4) steel tower segments, nacelle, rotor and hub assembly, and three blades. The turbine disassembly will be accomplished using large industrial cranes. If it is not cost effective to resell the turbines, the components will be processed on site into sizes which conform to scrap metal recycling requirements. The materials can then be sold for scrap material value and recycled. The tower sections, in particular, represent a substantial amount of high quality steel materials. The processed scrap materials will be loaded on tractor-trailers and removed from the site to a prearranged receiving location, or directly to a recycling or disposal facility. If the components are resold, the individual components will be loaded onto turbine transport vehicles similar to the vehicles originally used to deliver the turbine parts.

*Turbine Foundation Removal and Restoration*

Turbine foundations are fabricated of concrete and rebar. Topsoil and aggregate from the area surrounding the foundations will be stripped, segregated, and stockpiled near the work site for reapplication during restoration. The turbine foundation will be exposed using backhoes, bulldozers, or other earth moving equipment. The pedestal (upper part of the turbine foundation) will be removed to a depth of four (4) feet below the final ground surface. Demolition of mass concrete is generally accomplished using hydraulic hammers mounted on a backhoe or similar equipment (hoe ram), or by the use of expansive chemicals placed in holes drilled in the concrete. Concrete and rebar will be broken into manageable-sized pieces and loaded into dump trucks to be hauled off site for recycling as aggregate or for disposal.

Following the removal of turbines and foundation pedestals, the resulting voids will be backfilled with clean native subsoils and compacted to a density similar to surrounding subsoils (typically approximately 90% of the fill material's standard Proctor density). Topsoil will then be reapplied to the site and graded to blend with the surrounding grade and preserve pre-existing drainage patterns. The soil and topsoil will be decompacted to a minimum depth of 18 inches and restored to a tillable pre-construction condition, or re-seeded to promote revegetation. If necessary, the site will be temporarily or permanently revegetated, depending upon location, time of year, and anticipated post-decommissioning land use. Any drain tile lines damaged during removal and restoration of turbine foundation areas will be repaired to ensure drainage is maintained.

*Access Road/Met Tower Road Removal and Restoration*

Access roads will be removed or left in place based on the individual landowner's request. Removal of access roads will entail removal of the road base aggregate and any other materials used for constructing the roads. During removal, the topsoil adjacent to both sides of the roads will be stripped and stockpiled in a windrow paralleling the road. The road base materials will then be removed by bulldozers and wheeled loaders, or backhoes, and hauled off site in dump trucks to be recycled or disposed of at an off-site facility. On-site processing may allow much of the aggregate to be reused to improve public roads. The decommissioning contractor will also likely seek disposal opportunities for clean fill from nearby landowners to reduce hauling and disposal costs. If geotextile fabric was utilized under the aggregate base, it will be removed and disposed of in a landfill off-site. The access road removal will proceed from the turbine area to the public roads to limit tracking and provide a stable access during removal. Following removal, topsoil will be reapplied and graded to blend with surrounding contours to promote pre-construction drainage patterns. Topsoil to cover the access roads, turbine rings, and met tower rings will be acquired from the areas where it was stockpiled (or wasted) during the original construction. Since topsoil stayed with each landowner in the construction of the wind farm there will be adequate topsoil to restore each area to its pre-construction condition. The soil and topsoil will then be decompacted to a minimum depth of 18 inches and restored to pre-construction tillable condition or revegetated.

*Underground Electrical Collection Lines*

The electrical cables and fiber optic conduits are installed at a depth of a minimum of 4 feet (by plan), and contain no material known to be harmful to the environment. The only exception is cables entering ground mounted transformers and junction boxes. Accordingly, the majority of underground cables will be left in place, non-functional. Any cable at a depth of less than four (4) feet will be removed. Following cable, junction box, and route marker removals, disturbed areas will be restored by the restoration methods described above for access roads, including the reapplication of topsoil to match the surrounding grade and preserve or promote pre-existing drainage patterns. Soil and topsoil will be decompacted to a minimum depth of 18 inches.

*Overhead Electrical Collection Lines*

The Project substation is located adjacent to an existing transmission line, resulting in a short (single span) overhead transmission line. All poles, conductors, switches and lines associated with this interconnection link will be removed and hauled off site to a recycling facility or disposal site. Pole foundation holes will be filled with a suitable clean compactable material. Topsoil will be applied, and the areas will be revegetated to a pre-construction condition. The interconnection substation will be owned by the transmission line owner, so the scope of the interconnect facility decommissioning is not included with the Wind Farm.

*Substation*

All steel framing, conductors, switch gear, transformers, security fence and other components of the step-up facility will be disassembled and recycled or reused off-site. Foundations and underground components will be removed to a depth of four (4) feet. The rock base will be removed using bulldozers and wheeled loaders or backhoes. The material will be hauled from the site using dump trucks to be recycled or disposed of at an off-site facility. Permanent storm water treatment facilities, such as retention basins, will be removed. Topsoil will be reapplied to blend with the surrounding grade to promote pre-construction drainage patterns. Soil and topsoil will be

decompacted to a minimum depth of 18 inches and the site will be restored to the pre-construction tillable condition or revegetated.

*Operations and Maintenance Facility*

The Great Pathfinder wind project may rent an existing building, or construct a new building for its O&M building. If the building is leased, possession will be returned to the owner at the end of the project.

Hydraulic oil and lubricants will be stored in the building during operation of the wind project. The project will have a Spill Prevention Control and Countermeasure plan in place during operations that will require immediate clean-up of any spilled hazardous materials, so the cleanup of any hazardous materials is an operating cost and not a decommissioning cost.

The O&M facility, if constructed, will likely be a sturdy, general purpose, steel building. Buildings have a longer useful life than wind turbines, so the building will not likely be at the end of its useful life when the Facility is decommissioned. Decommissioning will consist either of the sale of the building, the donation of the facility, or the demolition and removal of the structure, foundation, and rock base parking lot and associated storm water treatment facilities. If demolition is undertaken, all associated materials, concrete and rock will be removed from site using backhoes and bulldozers, and hauled off site in dump trucks. All materials which are able to be recycled will be brought to an approved facility. The remaining materials will be disposed of at an approved landfill. Topsoil will be reapplied to the site and graded to blend with the surrounding grade to promote existing drainage patterns. The topsoil will be decompacted to a minimum depth of 18 inches and restored to a pre-construction tillable condition or revegetated.

## 3.2 RECLAMATION

In addition to the reclamation activities described above for each decommissioning activity, all unexcavated areas compacted by equipment and activity during the decommissioning will be decompacted to a depth of 18 inches or to a depth as needed to ensure proper density of topsoil consistent and compatible with the surrounding area and associated land use. All materials and debris associated with the Facility decommissioning will be removed and properly recycled or disposed of at off-site facilities.

As necessary, the topsoil will be stripped and isolated prior to removal of structures and facilities for reapplication to promote future land use activities. The topsoil will be reapplied following backfill, as necessary, and graded to blend with adjacent contours to maintain pre-construction drainage patterns. The topsoil reapplied will be free from rocks larger than four inches and will not contain debris from decommissioning. Decompaction of the soil and topsoil will be done to a minimum depth of 18 inches. If the area is not going to be used for crops, the topsoil will then be revegetated using seed mixes approved by the local Farm Service Agency, Soil and Water Conservation District, or Natural Resource Conservation Service. Temporary erosion protection such as mulch, hydromulch or erosion control blanket will be applied in accordance with the requirements of the project Storm Water Pollution Prevention Plan (SWPPP).

# 4.0 BEST MANAGEMENT PRACTICES (BMPs)

During decommissioning, erosion and sediment control BMPs will be implemented to minimize potential for sedimentation of surface waters and waters of the state. Because decommissioning will entail disturbance to more than one acre of soil, Applicant will prepare a Storm Water Pollution Prevention Plan (SWPPP) and process a National Pollutant Discharge Elimination System (NPDES) permit prior to initiating soil disturbing activities. The potential BMPs described below

are examples which will be subject to refinement in the SWPPP. The decommissioning team will review the permitting requirements at the time of decommissioning, and obtain any other necessary permits, which may include a U.S. Army Corps of Engineers Section 404 Permit to Discharge Dredged or Fill Material. Because virtually all of the project area is currently used to raise crops, exposed soil is a common condition and only minor erosion and sediment control is expected.

## 4.1 EROSION CONTROL

Erosion control measures are described generally here, but will be refined based on the standard of practice current at the time the SWPPP is developed for decommissioning. All disturbed areas without permanent impermeable or gravel surfaces, or planned for use as crop land, will be vegetated for final stabilization. All slopes steeper than 4:1 should be protected with erosion control blankets. Restoration should include seed application prior to application of the blanket. All slopes 4:1 or flatter should be restored with seed and mulch, which will be disc anchored.

Project Phasing/Design BMP: Time periods during which disturbed soils are exposed should be minimized the degree possible. Stabilization of soils will generally be accomplished immediately following decommissioning of the access roads, turbine sites, electrical and fiber optic cables, step-up substation, and O&M facilities. Where this is not possible, temporarily exposed soils will be temporarily stabilized with vegetation in accordance with the SWPPP for decommissioning.

Erosion Control Blankets and Seed BMP: Erosion control blanket (double sided netting with wood fiber or weed-free straw fiber blanket) will be used as temporary stabilization for areas of slopes steeper than 4:1 and for areas of concentrated flow, such as ditches, swales, and similar areas around culverts. Seed will be applied in these areas with the blanket for temporary and/or permanent vegetative growth as necessary. The SWPPP developed for decommissioning will provide detailed specifications for erosion control blankets to be used under various slope and drainage conditions.

Ditch/Channel Protection: Where new channels are formed, as in the case of culverts removed from access roads and the removal of low water crossings, the resulting channel will be protected with erosion control blankets as described in the section above.

Surface Roughening: Surface roughening or slope tracking is the act of running a dozer or other heavy tracked equipment perpendicular to the grade of disturbed slopes with a grade of 3H:1V and steeper with a continuous length of 75 feet or greater. The tracks will provide a rough surface to decrease erosion potential during an interim period until a smooth grade, seed and erosion control blanket can be applied.

Temporary Mulch Cover and Seed BMP: Temporary mulch cover (wood fiber to resist loss from grazing by wildlife or domestic animals) will be applied at a rate of two tons per acre to provide temporary erosion protection of exposed soils areas with slopes flatter than or equal to 3:1. Seed will be applied with the mulch for temporary and/or permanent vegetative growth as called for in the SWPPP. Mulch will be used for all soil types where slopes are flatter than 3:1 and no significant concentrated flows are present. The mulch will be disc-anchored to the soil to keep it from blowing away. The mulch prohibits the impact of the rain drop from dislodging soil and subsequently carrying the soil away during sheet drainage. In sandy soils, tackifier may be used to assist the disc anchoring if the mulch cannot be secured to the sandy soils.

Soil Stockpiles: Topsoil that is stripped from the construction site and base materials will be stockpiled on site. Stockpile areas will be located in areas that will not interfere with the decommissioning activities, and be located away from pavement, site drainage routes, or other

areas of concentrated flow. Stockpiles should also be located away from wetlands and surface waters. Perimeter controls, such as silt fence, will be installed around all stockpiles if stockpiles are not placed within existing silt fences or other sediment control, where the potential exists for material to be eroded and transported to sensitive nature resources. Soils that are stockpiled for longer durations will be temporarily seeded and mulched, or stabilized with a bonded fiber polymer emulsion.

Permanent seed and temporary mulch and/or erosion control blanket BMP: In areas at final grade that will not be used for agriculture, permanent seed will be applied to promote vegetative cover for permanent erosion control. Temporary mulch and/or erosion control blanket will be applied as appropriate in areas to provide temporary erosion protection until the permanent seed is established.

## 4.2 SEDIMENT CONTROL

Removal of Ditch Crossing BMP: Temporary ditch crossings may be needed to accommodate the movements of cranes or other heavy equipment. Perimeter controls such as silt fence will be used at crossing locations to minimize runoff from exposed soils. Crossings will be done during dry conditions, if possible. If a stream is wet at the time of the crossing, alternative BMPs will be applied. These could include a temporary dam and bypass pump to install the crossing in dry conditions. Timber construction mats will be used as needed to prevent compaction and rutting at crossing locations. All temporary fills and construction mats will be removed immediately after the crossing is successfully completed and the temporarily disturbed area restored using the appropriate BMPs as described above.

Dewatering: A temporary sump and rock base will be used if a temporary pump is used to dewater an area of accumulated water. If a rock base cannot be used, the pump intake will be elevated to draw water from the top of the water column to avoid the intake and discharge of turbid water. Energy dissipation riprap will be applied to the discharge area of the pump hose. The water will be discharged to a large flat vegetated area for filtration/infiltration prior to draining into receiving waters of conveyances/ditches. If discharge water is unavoidably turbid, dewatering bags, temporary traps, rock weepers, or other adequate BMP will be used to control sediment discharge.

Silt Fence BMP or Fiber Logs: Silt fences or fiber logs will be used as perimeter controls downgradient of exposed soils during construction to capture suspended sediment particles on site, to the extent possible. The standard silt fence or fiber logs will also be used in smaller watershed areas where the contributing areas are typically less than 1/4 acre of drainage per 100 feet of standard silt fence or the fiber logs. Standard silt fence or fiber logs will also be used for stockpiles 8 feet high or higher which have slopes of 3:1 or steeper. Standard silt fence or fiber logs should not be used in areas of highly erodible soils which are found within streams, slopes, or banks of creeks and streams within the Facility's site.

Rock Entrance/Exit Tracking Control BMP: Rock construction entrances will be installed where access to a construction area is needed from adjacent paved surfaces.

Street Scraping/Sweeping BMP: Street scraping and sweeping will be used to retrieve sediment tracked or washed onto paved surfaces at the end of each working day, or as needed.

## 4.3 CONTROLLING STORMWATER FLOWING ONTO AND THROUGH THE PROJECT

Given the low gradient of the slopes in the project area, controlling stormwater flow that enters the project area will likely require minimal effort during decommissioning activities. Only newly disturbed areas may require new, temporary stormwater control.

Diversion Berms/Swales/Ditches: It may be necessary to direct diverted flow toward temporary settling basins via berms, swales, or ditches. If diversion controls are deemed necessary for decommissioning activities, these must be stabilized by temporary mulch and seeding, erosion control blankets, or by installing riprap to protect the channel from erosive forces.

Rock Check Dams: It may be necessary to install temporary check dams within swales or ditches that convey storm water from areas disturbed by decommissioning activities. Rock check dams are effective for velocity control, sediment control, and to augment temporary stabilization of channels. Filter fabric can be utilized to help filter the flow, minimize the scour of the soil under the rock, and facilitate removal of the check dams once permanent stabilization is achieved. The height of check dams should be at least two feet. Spacing depends upon slope. Downgradient rock checks should have the top elevation at the same elevation as the bottom of the previous (upgradient) rock check.

Hay Bale Check Dams: Hay bale check dams may be used for velocity control within swales of the project to slow the water runoff within the drainage channels/swales. The bales should be approximately three feet in length and anchored into the soil. The midpoint elevation of the top of the bale (i.e. ponding height) must be lower than the end points of the bale where the bale meets grade, to prohibit water from flowing around the bales, thus causing erosion and scour. If the bales cannot be applied properly in the field, the use of rock checks as a replacement is recommended.

Temporary Sedimentation Basins: Sedimentation basins serve to remove sediment from runoff from disturbed areas of the site. The basins allow runoff to be detained long enough to allow the majority of the sediment to settle out prior to discharge. The location and dimensions of temporary sedimentation basins, if any are necessary, will be verified in accordance with Iowa Department of Natural resources (Iowa DNR) requirements at the time of decommissioning.

## 4.4 PERMITTING

All decommissioning and restoration activities will comply with federal, state, and county permit requirements. Decommissioning activities that will disturb more than one acre of soil may trigger the NPDES Construction General permitting process and Iowa general permit or Notice of Intent. The permits, if required, will be applied for and received prior to decommissioning construction activities commencing. A Storm Water Pollution Prevention Plan will be developed prior to filing a Notice of Intent. If permanent crossings are to be removed and no discharge of dredged or fill material will take place, then a Section 404 permit is not anticipated for the decommissioning of the Facility. No air permits are currently required for construction activities typical for decommissioning. Iowa DNR air quality rules will be reviewed at the time the work is scheduled to determine if an air quality permit will be required. Further, no operating air quality permits are needed for ongoing operation of the wind farm facility. Should decommissioning activities cause temporary or permanent impacts to wetlands, an Iowa DNR Wetlands Permit will be obtained prior to any activities commencing, if required. Should decommissioning activities cause temporary or permanent impacts to vernal pools, an Army Corps of Engineers General Permit for the State of Iowa will be obtained prior to any activities commencing. Should any in-

terim permits become needed, they will be closed out with documentation of compliance at decommissioning. A Spill Prevention, Control and Countermeasures (SPCC) Plan for decommissioning, separate from the operating SPCC, will likely be required.

## 5.0 TIMELINE

Decommissioning of the wind farm will be initiated if the project has not produced electricity for a period of one (1) year unless other mitigating circumstances prevail. The following sections outline a timetable for the decommissioning plan, steps towards compliance with applicable air and water quality laws and regulations, and steps for compliance with health and safety standards.

### 5.1 DECOMMISSIONING SCHEDULE

It is anticipated that the decommissioning activities for the project can be completed in an eight (8) month period. The estimated costs for decommissioning are tied to assumptions about the amount of equipment mobilized, the crew sizes, weather and climate conditions, and the productivity of the equipment and crews. No utility sized wind farm has been decommissioned to date so there are no historical activity durations available for some of the activities that can be applied directly.

### 5.2 WATER REGULATORY COMPLIANCE

Water Quality: NPDES permitting will include the following steps for compliance:

1. Complete a SWPPP consistent with the requirements of the Iowa NPDES General Construction Permit applicable at the time of decommissioning.
2. Submit the NPDES Notice of Intent at least 30 days prior to starting construction activities associated with decommissioning.
3. Once notification of permit coverage is received, decommissioning will commence.
4. During decommissioning, compliance with the NPDES permit (applicable at the time of decommissioning) will be adhered to including inspections, documentation, maintenance of BMPs, record keeping, amendments to the Plans, and implementation of the SWPPP.
5. Within 30 days of completing decommissioning and restoration, a Notice of Termination (NOT) will be submitted to Iowa DNR to terminate coverage of the NPDES permit.

Water Quality: Section 404 Discharge of dredged and fill material, if required, will include the following steps for compliance.

1. Notification to the Corps of Engineers if needed, of expected activities such as temporary stream/water body crossings.
2. Verification of necessary permits (if any).
3. Apply for any necessary Section 404 permits prior to commencing work within waterways/ wetlands.
4. As applicable, develop Plans to comply with necessary permit regulations.
5. Upon receipt of applicable permits, decommissioning work will commence adhering to rules, timelines and requirements stated in applicable permits.

### 5.3 HEALTH AND SAFETY STANDARDS

Work will be conducted in strict accordance with Applicant's health and safety plan. The construction contractor hired to perform the decommissioning will also be required to prepare a site-specific health and safety plan. All site workers, including subcontractors, will be required to read, understand, and abide by the Plans. A site safety office will be designated by the construction

contractor to ensure compliance. This official will have stop-work authority over all activities on the site should unsafe conditions or lapses in the safety plan be observed.

## 6.0 DECOMMISSIONING COSTS AND FINANCIAL ASSURANCE

Since there are no utility scale wind farms that have been decommissioned to date, there are no historical costs available to base this estimate on. This cost estimate was prepared: (1) in current dollars; (2) with the salvage value of equipment or materials calculated separately. The estimate includes: (i) an analysis of the physical activities necessary to implement the approved reclamation plan, with physical construction and demolition costs based on applicable Iowa Department of Transportation unit bid prices and RS Means material and labor cost indices; (ii) the level of effort or number of crews required to perform each of the activities; and (iii) an amount to cover contingencies above the calculated cost. The Estimate is shown on a total cost and on a per-turbine basis.

Cost and quantities shown are preliminary for the Great Pathfinder Wind Project, as design is not complete at the time this estimate was prepared. Since this estimate is intended to cover the first years of wind farm operation it can be assumed that there will be some resale value for the turbines. Analyses done on recent project indicate that current resale prices are in the range of $100,000 per MW, but that the current market does not support the resale of as many turbines as are planned for the Facility. To be conservative, no estimate of resale value was made.

Turbines that are not resold will have the materials recycled as scrap. The estimate uses a current structural scrap price of $180 per ton, in the Midwest, based on prices posted on http://www.scrapmonster.com/scrap-prices/category/Steel/300/1/1. The posted prices are three months old. Scrap metal prices are very volatile. Current prices are less than 40 percent of the peak prices in 2008. Electrical transformers have significant value for aluminum or copper used in the windings and the steel used in other parts of the transformer. Newer transformers can be resold. Older transformers are recycled as scrap. There are few companies that accept used transformers for resale or recycling, so finding pricing is difficult. For this estimate we used pricing posted scrapmonster.com of $0.37 per pound for used transformers. We assumed the posted price is similar to the price offered by A-Line E.D.S. in Waterloo, Iowa which was identified as a regional transformer recycler. In this first cycle of cost estimating it may be possible to resell all of the transformers at a much higher price than the scrap value used.

Spot prices for insulated copper wire (85% recovery) are $1.57 per pound, scrap electrical motors are $0.25 per pound, and E.C. aluminum wire are $0.77 per pound.

Discounts from the posted spot prices, ranging from twenty-five percent (25%) for structural steel to fifty percent (50%) for aluminum wire, have been used to reflect the difficultly in realizing spot prices from local recyclers.

The form of financial assurance is a financial instrument mutually agreed upon by Boone County Board of Supervisors and Applicant, and will be adjusted upward or downward to offset any increases or decreases in decommissioning costs and salvage values determined during periodic Plans updates. If decommissioning of the Facility or individual turbines is undertaken, Applicant will, upon satisfactory completion, provide supporting documentation to the Boone County Board of Supervisors with a request for the release of the posted funds or financial assurance.

The Applicant grants the Boone County Board of Supervisors the right of entry to the Facility and the right to sell and transfer recycled material to salvage firms in the event of default by the Applicant.

The total cost of the decommissioning of the Great Pathfinder Wind Project facilities located in Boone County (see Table 1) is approximately $4,596,000 ($124,200 per turbine) including a ten percent (10%) contingency on the demolition costs and crop loss value. Salvage/scrap value of the turbines, transformers, and other materials is approximately $1,902,000, or $51,400 per turbine. Including resale and salvage values, the net cost is approximately $2,964,000, or $72,800 per turbine.

The Boone County Ordinance requires a financial security of 110 percent of the decommissioning cost, which is $2,963,000

**Table 1: Cost Estimate**

| Great Pathfinder Wind Project - DECOMMISSIONING COST ESTIMATE - Boone | |
|---|---|
| General Conditions (Field Staff Cost) | $200,000 |
| Operation & Maintenance Building (Assume Resale) | $0 |
| Substations (Dismantle and Removal) | $104,172 |
| Met Tower (Dismantle and Removal) | $10,533 |
| Access Road Removal (Remove Agg./Regrade) | $229,033 |
| Crane Path Restoration (Water Crossing Removals and Decompaction) | $81,341 |
| Crane Mobilization (2, Mobilization and Demobilization) | $400,000 |
| Turbine Tower Dismantle and Salvage Prep (Dismantle/Salvaging) | $1,157,491 |
| Transformer Removal | $45,710 |
| Blade Disposal (Dismantle/Disposal) | $259,582 |
| Turbine Foundation Removal (48 inches Demolition/Removal) | $289,897 |
| Electrical Collection/Transmission Line Removal | $360,109 |
| Erosion and Sediment Control BMP's | $35,737 |
| Site Restoration (Final Surfacing and Revegetation following Removals) | $260,613 |
| Public Road Restoration | $619,292 |
| Subtotal | $4,053,509 |
| | |
| Contingency (10%) | $405,351 |
| Total Estimated Decommissioning Cost (not including salvaged value) | $4,458,860 |
| | |
| Crop Loss | $137,400 |
| Total Cost | $4,596,260 |
| Total Estimated Decommissioning Cost per Turbine (not including salvage value) | $124,223 |
| | |
| Total Salvage Value for Project | $1,902,586 |
| Resale and Salvage Value per Turbine (37 Turbines) | $51,421 |
| | |
| Total Estimated Decommissioning Cost (including salvaged value) | $2,693,673 |
| Financial Assurance (110% of Decommissioning Cost) | $2,963,040 |
| Total Net Decommissioning Cost Per Turbine Minus Salvage Value | $72,802 |